

- (d) A performance check is a shortened form of operational testing to the standards required by the Marine Radar Performance Specification, such as could be carried out in 5 to 15 minutes. This time does not include a period of pre-heating in cases where delayed switching is used.

4. Visual Inspection and Performance Test

After each phase of the testing sequence, the equipment shall be visually inspected to determine that it is acceptable.

5. Dry Heat Cycle

(a) Class B Equipment

The equipment shall be placed in a chamber which is maintained at a constant temperature of $+55^{\circ}\text{C}$ ($\pm 3^{\circ}\text{C}$) for a period of 10 hours, after which it shall be kept working continuously for a period of 2 hours at that temperature. A performance check shall be carried out during the last 30 minutes of the test period.

(b) Class X Equipment

- (i) The equipment shall be placed in a chamber which is maintained at a constant temperature of $+70^{\circ}\text{C}$ ($\pm 3^{\circ}\text{C}$) for a period of 10 hours.
- (ii) The chamber shall then be cooled to $+55^{\circ}\text{C}$ ($\pm 3^{\circ}\text{C}$) and the equipment shall be kept working continuously at that temperature for a period of 2 hours.
- (iii) At the end of 2 hours, the equipment shall be subjected to a performance check at a temperature of $+55^{\circ}\text{C}$ ($\pm 3^{\circ}\text{C}$).

(c) Class B and Class X Equipment

At the conclusion of the performance check, the equipment shall be exposed to normal room temperature ($+20^{\circ}\text{C}$) for at least 3 hours before the damp heat cycle.

6. Damp Heat Cycle - Applied to Both Class B and Class X Equipment

- (a) The equipment shall be placed in a chamber which within a period not exceeding 2 hours shall be heated from room temperature to $+40^{\circ}\text{C}$ ($\pm 3^{\circ}\text{C}$) and shall be brought to a relative humidity of not less than 95%.

- (b) The chamber shall be maintained at a temperature of $+40^{\circ}\text{C}$ ($\pm 3^{\circ}\text{C}$) for a minimum period of 12 hours and at a relative humidity of not less than 95%.
- (c) At the beginning of the last 60 minutes of the above period, all accessible surfaces and components may be wiped dry and fans and any sources of heat provided in the equipment may be switched on.
- (d) During the last 30 minutes of the period referred to in Paragraph (b), above, and while the temperature of the chamber is still $+40^{\circ}\text{C}$ ($\pm 3^{\circ}\text{C}$) at a relative humidity of not less than 95%, the equipment shall be subjected to a performance check.
- (e) The temperature shall then be allowed to fall below $+25^{\circ}\text{C}$ in not less than 1 hour, while the equipment is enclosed in the chamber, and shall then be expected to normal room temperature ($+20^{\circ}\text{C}$) and humidity for a period of 3 to 6 hours before the Low Temperature Cycle.

7. Low Temperature Cycle

(a) Class B Equipment

- (i) The equipment shall be placed in a chamber, which is maintained at a temperature of -15°C ($\pm 3^{\circ}\text{C}$) at normal atmospheric pressure for a minimum period of 12 hours.
- (ii) During the last 30 minutes of the above period, the equipment shall be subjected to a performance check at the controlled temperature. (If built-in heaters are provided in radar equipment, these may be switched on 30 minutes before the performance check is carried out.)

(b) Class X Equipment

- (i) The equipment shall be placed in a chamber, which is maintained at a temperature of -25°C ($\pm 3^{\circ}\text{C}$) at normal atmospheric pressure for a minimum period of 12 hours.
- (ii) During the last 30 minutes of the above period, the equipment shall be subjected to a performance check at the controlled temperature. (If built-in heaters are provided in radar equipment, these may be switched on 30 minutes before the performance check is carried out.)

8. Vibration Standards (Class B and Class X)

- (a) The equipment, complete with its chassis covers and shock absorbers (if supplied), shall in its normal operating position be clamped to a vibration table.
- (b) The table shall be vibrated at frequencies between:
 - (i) 5 hertz and 12.5 hertz with an excursion of ± 1.60 millimeter (± 0.063 inch).
 - (ii) 12.5 hertz and 25 hertz with an excursion of ± 0.38 millimeter (± 0.015 inch).
 - (iii) 25 hertz and 50 hertz with an excursion of ± 0.10 millimeter (± 0.004 inch).

Each range of frequencies shall be explored in not less than 8 minutes, during which periods the equipment shall be kept working continuously.

- (c) A performance check shall be carried out during the above test.
- (d) Vibrations shall be applied in three mutually perpendicular directions.

9. Rain Test (Class X Only)

A solid stream of water from a 13 millimeter (0.5 inch) or larger diameter garden type hose and nozzle connected to a normal domestic supply (2.5 to 3.5 kg/cm²) (35 to 50 psi) shall be directed at the equipment from all angles at a distance of 3 meters (10 feet) for a period of 30 minutes.

10. Corrosion Test

For Class X equipment and sample exterior materials and finishes; for Class B equipment as may be required by the type testing authority.

(a) Salt Water

- (i) The equipment shall be sprayed with a fine mist, such as would be produced by a spray gun ejecting cold tap water, containing the following salts in solution:

Sodium Chloride	2.7%
Magnesium Chloride	0.6%
Calcium Chloride	0.1%
Potassium Chloride	0.07%

The quantity of each salt shall be subjected to a tolerance of $\pm 10\%$.

- (ii) The equipment shall be sprayed on all its external surfaces with the salt solution for a period of 1 hour and shall be kept working continuously for the last 30 minutes thereof.
- (iii) This spraying shall be carried out four times with a storage period of 7 days at $+40^{\circ}\text{C}$ ($+3^{\circ}\text{C}$) between the repetitions. The relative humidity during storage shall be greater than 60%.
- (iv) At the conclusions of the total period, the equipment shall be visually examined. There shall be no undue deterioration or corrosion of the metal parts, finishes, materials, or component parts. The equipment shall then be subjected to a performance check. In the case of hermetically sealed equipments, there shall be no evidence of moisture penetration on opening the cover.

11. Mold Growth Test

All materials used in the radar system should inhibit fungus growth.